A B S T R A C T

A transmitting unit emits a short pulse wave which satisfies a predetermined spectrum mask from an antenna into space. A receiving unit receives a reflected wave produced by an object existing in space of the short pulse wave emitted by the transmitting unit. A signal processing unit analyzes the object based on an output signal from the receiving unit. The transmitting unit has a pulse generator which outputs pulse signals each having a predetermined width at a predetermined frequency, and a burst oscillator which receives the pulse signal output from the pulse generator and performs an oscillation operation for time corresponding to the width of the pulse signal to output the short pulse signal. A width and a cycle of the pulse signal and an oscillation frequency of the burst oscillator are set such that almost an entire main lobe of a spectrum of the short pulse wave falls within a range of 24.0 to 29.0 GHz in the predetermined spectrum mask, and that a radiation power density to an RR radiowave emission prohibited band held by the predetermined spectrum mask is lower than a peak radiation power density of the main lobe by not less than 20 dB.